

FlamEL Akusta was developed to stem open fires or prevent them from spreading.

It can also reduce the spread of heat on solid materials such as minerals, plastics, wood and metals. The patent was granted in the EU, the USA, Australia and New Zealand.

General Description

The **FlamEL Akusta** is a special fire barrier with soundproofing and acoustic quieting properties based on EVA, EPDM, PP, PE, PA as well as other alkenes and specific synthetic oils. It is based on thermoplastic binding materials and filler materials (partially based on minerals).

The **FlamEL Akusta** was developed for the purpose of containing open fire or keeping it from spreading. It can also reduce heat transfer to hard materials like minerals, plastics, wood, and metals.

The **FlamEL Akusta** can be applied to other materials as a protective layer. The same material can also be used to produce moulds, i.e. it can completely replace the formulation of existing products.

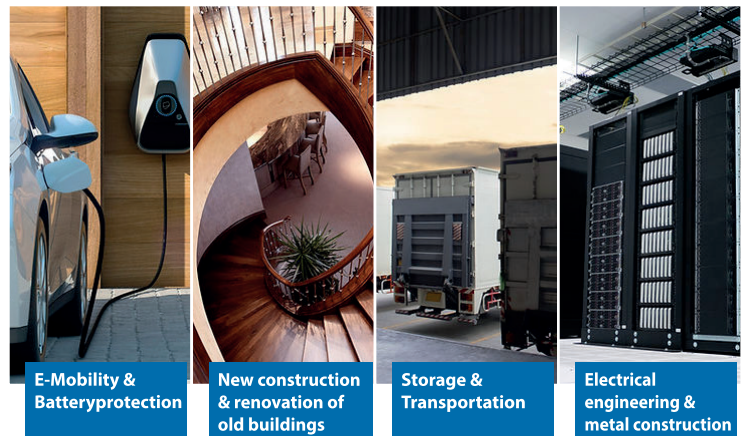
The **FlamEL Akusta** has the same soundproofing qualities as other heavy layers.

How does FlamEL Akusta work?

Chemically bound water is slowly released on contact with fire, creating water vapor that insulates and consumes energy. A 3 mm foil contains 1 liter of chemically bound water per square meter = 5 kg of mass, which results in 1,860 liters of water vapor over time.

The special fire protection foil also has sound-insulating and structure-borne noise-damping properties based on polyolefins and inorganic components such as aluminum hydroxide and magnesium hydroxide. With the same weight per unit area, the material has the same sound insulation values as conventional heavy foils.

Since **FlamEL Akusta** is a thermoplastic material, a carrier material (fabric, wood, plastic, metal) is required in order to be able to fully develop its properties.



Chemical properties

- Mineral based filler materials and flame retardants.
- Classified as nonflammable according to fire protection requirements of various industries (building, vehicle, railroad, ship transport).
- Material can be fixed mechanically or using various adhesives.
- Material does not contain any carcinogenic materials.
- Smoke does not contain chloride, bromine or heavy metal compounds.
- The FlamEL_Akusta is a thermoplastic material and therefore requires a carrier material in order to show its full potential.
- Its fire barrier qualities can be shown when protecting any of the following types of materials: metal, plastics, wood, fiber glass, and woven fabrics.
- Non-resistant to acids and alkalis
- Limited resistance to diesel fuel, oils, grease and petrol

FlamEL Akusta is classified as domestic waste!

Health aspects

- REACH compliant
- PAH free
- Contains no carcinogens
- No dioxin released during fires
- Fumes contain no chlorine, bromine or heavy metal compounds
- The aluminium hydroxide releases chemically bonded water and CO₂ at 200°C and the magnesium hydroxide releases the same at 300°C

Airborne sound insulation values

- Airborne sound insulation depends on the module elasticity of the chosen synthetic material
- Average sound insulation R'm at 5kg/m²: approx. 22dB, improving by 6 dB with every doubling of mass, (Berger's mass law)
 - R'm as per DIN 52210 at 200 Hz: 6.0 to 21.0 (depending on unit weight)
 - R'm in dB at 2000 Hz: 26.0 to 41.0 (depending on unit weight)

Processing

FlamEL Akusta can be manufactured as sheets or rolls, from 0.3 mm, and can be combined with numerous materials in the production process (e.g. glass fabric) or connected to a wide variety of substrates and materials using adhesives. The material can also be used as a granulate for injection molding or other thermoplastic processing techniques.

Fire tests:

Fire test on TV „SWR Landesschau“:

<https://youtu.be/YDjkxmh1pk>

Fire test wooden staircase:

<https://youtu.be/hWPaB8ELCpg>

Fire test on TV „MDR - Einfach genial“:

<https://youtu.be/QkDQEVgJLb0>

Fire test wooden staircase with temperature recording:

<https://youtu.be/A4GNbQljbU>

Applications:

• Car manufacturing/electromobility

- Encapsulation of control units and batteries
- Sheathing of wire harnesses

• Construction industry

- Tunnel construction
- Solar roof protective membrane
- Fire-protection doors
- Emergency shelters
- Fire shelters & structures
- Data centres / IT systems
- Raised floors

• Brown goods

- Electronic control units
- Electrical cabinets
- Industrial fryers
- Kitchen equipment

• Busbau

- Engine compartment and closures
- Electrical equipment enclosures

• Elektrotechnik, Elektronik

- cable sheaths
- Cable channels

• Gas and steam compartments

• Building construction (floors, walls, stairs)

- Cladding elements
- Partition walls
- All types of piping (e.g. ducts, utility lines, drain lines)
- Fire protection as enclosure or substrate
- Fire protection for steel or wooden carrier

• Household appliances / white goods

- Toasters
- Heaters

• Laboratory equipment

• Agricultural machine industry

• Logistics and transport

- Hazardous materials storage
- Forklifts
- Battery transport (also damaged power storages)

• Machine and equipment manufacturing

- Painting facilities
- Powder-coating facilities
- Chemical-handling facilities

• Metal processing

- Safes / strongboxes
- Elevators
- Gondola cableways
- Fire-protection doors

• Oil and gas industry

• Railway vehicles

- Undercarriage protection
- Panel liner
- Gangways and doors

• Shipbuilding

• Hose manufacturing

- Water hose for firefighting
- Hydraulic hose
- Coolant hose

• Textilindustrie

- Fire-protection clothing
- Fire-protection blankets & foils

• Military equipment

Technical properties:

Property	Unit	Value	Test standard
Thickness ¹⁾	g/cm ³	1.50	DIN EN ISO 1183-1
Hardness ²⁾	Shore A	61	DIN 53 505
Tensile strength	N/mm ²	0.9	EN ISO 13934-1
Elongation at break ²⁾	%	453	EN ISO 13934-1
Tear strength	N/mm	4.0	DIN 53 507
Ozone resistance		n.a.	DIN 53 509
UV resistance		n.a.	DIN 53 388
Temperature resistance	°C	-0,5	
Electrical surface resistance Rd ³⁾	GΩ	> 300	
Electrical surface resistance Ro ³⁾	TΩ	> 1.7	
Water vapour permeability	μ value	n.a.	DIN 53 122
Fire resistance		B-s1, d0 Test report MPA 901 9156 0001 Test report MPA 901 9156 0002 B1 M1 F1 S4/SR2/ST2 UL 94 HF-1 V0/4.0 mm	DIN 13 501-1 DIN EN ISO 11925-2 DIN EN 13 823 DIN 4102-1 NF P 92-501 NF X 70-100 DIN 5510-2 UL 94 HBF UL 94
Thermal conductivity		n.a.	

1) Specific weight can be modified as needed from approximately 1.2 to 4.5 kg/m².

2) Shore hardness can be modified and elongation specified between 50% to 800%. Elongation is inversely proportional to tensile strength.

3) Measured on 2mm foil

All values given are average values and do not represent minimum or maximum values. Users must test suitability for their specific application.